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Professional Freedom

In these disturbing times, when every chemist is doing such important work to benefit his country, it becomes necessary as never before to see that professional freedom is maintained. More is demanded of chemists than education and specialized knowledge. The chemist must contribute not only his science but his leadership. He must serve his country not only in periods of adversity but in the dark period of readjustments which follow, when humanity will look to scientists for a better way of life. Every scientist must be concerned with freedom of thought and of action, and freedom of education, for his profession. In these days of pressure groups of all kinds which attempt to encroach on professional freedom, it behooves every chemist to realize the importance of his profession to humanity, and to keep it free, so that his precious right to think, to work, to achieve, and to serve may not be diminished. He must keep his profession independent of all outside influences.

This professional freedom can be maintained by united professional activity. The chemist must think not only of himself but of his fellow chemist. THE AMERICAN INSTITUTE OF CHEMISTS has built up professional feeling and mutual consideration for welfare, and its professional benefits are invaluable in such troublous times. Every member of the INSTITUTE should give serious thought as to how his profession may continue to be kept free. Suggestions should be sent to the National Council so that the profession may enjoy its freedom and serve humanity free from unwise domination by outside influences.



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Patents and Preparedness

By Charles W. Rivise, F. A. I. C.

A talk presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry.

IN THESE days of preparedness for national defense, we must not overlook the continued importance of research. National defense needs research almost as badly as it needs production. Research gives the quickest and most effective solution of immediate problems. It will enable our country to lead in the production of implements of defense as it has always led in the production of peacetime merchandise. If our industries are to survive the present emergency, research must not be neglected. For when the government stops ordering large quantities of armaments, research will fill the gap with new consumer goods, the true basis for a lasting prosperity.

Research and development work require large expenditures of time and money. Results would ordinarily not justify the expense, were it possible for competitors to avail themselves freely of the new developments. Formerly, the patent laws provided a very effective way to keep the field of an invention clear of competitors. Patent protection is not as effective a weapon as it once was, but unless an invention is of such a nature that it can safely be practiced in secrecy, it is still preferable to endeavor to protect it by means of a patent.

The creation of a favorable patent situation would be facilitated if the industrialist would adopt the golden rule as to his competitors' inventions; i.e., respect them as he would have his own inventions respected. The industrialist should adopt the policy of securing licenses, wherever possible, not only under his competitors' patents but also under the patents of independent inventors. Many of the really important advances in the arts have been made by free lance inventors, and the industrialist who ignores this source of new products is the loser in the long run.

The National Emergency

The war now raging in Europe has created problems, the like of which were never even dreamed of by the founders of this Nation.

We have become the arsenal for those nations that are continuing the fight against Nazi aggression. In addition, we have undertaken the equally gigantic task of producing sufficient implements of war to render ourselves invulnerable to attack by any nation or group of nations. These two self-imposed tasks must be accomplished with as little interference as possible to normal business and industrial activities. In other words, we must continue to supply all our peace-time necessities, whether previously produced in this country or imported from abroad.

In this national emergency, there is a growing danger that research will be neglected. Research was never as important as it is today. Preparedness for national defense needs research almost as badly as it needs production. Research gives the quickest and most effective solution of immediate problems. If not neglected, research will undoubtedly enable our country to lead in the production of the implements of defense as it has always led in the production of peacetime merchandise.

Research during the present emergency should not and must not be limited to preparedness for national defense. We must be as prepared for peace as we hope to be for war. Peace after a long and exhausting war is as much an emergency as the conflict itself.

The last war brought in its wake a world-wide economic depression, the effects of which are still with us. If we are to prevent the recurrence of the last post-war depression, we must lay our plans now. We must direct a large portion of our research activities to the problems of changing over our industries from a war-time to a peace-time basis. When the government stops ordering large quantities of armaments, the gap must be filled with better and less expensive consumer goods. Otherwise, there is the danger that many of our industries will not survive the present conflict. Only research has it in its power to create new consumer goods, which after all constitute the true basis for a lasting prosperity.

Patents — A Product of Research

Patents may well be considered as one of the products of research. Research and development work invariably require large expenditures of time and money, and the results would not justify the expense, were it possible for those who did not share in the expense to avail themselves freely of the new development. The patent statutes provide one way of keeping the field of an invention free of competitors. Hence, many industrial establishments make it a policy to apply for patent protection on every invention that has commercial possibilities.

Advisability of Obtaining Patent Protection

Patents are becoming increasingly more difficult to obtain. The great increase in technical knowledge has greatly decreased the possible scope of patent protection, and the patent examiners are becoming more and more reluctant to allow claims on relatively small advances in the arts. Furthermore, the protection afforded by a patent is not quite as effective as it once was. The courts in a sincere effort to protect the public against what they erroneously deem to be burdensome monopolies, have invalidated a large proportion of the patents that have come before them in the last few years or have interpreted them so narrowly as to render them of doubtful value.

There is a growing tendency on the part of some industrial establishments to endeavor to protect their inventions as trade secrets rather than by means of a patent. This is a very short-sighted policy, for trade secrets are much more difficult to protect than are patented inventions, and most industrial concerns do not intentionally infringe their competitors' patents. Since patents do have a tendency to deter infringement, they should be obtained on every invention having commercial possibilities, for exactly the same reason that business men take out insurance policies against other industrial hazards.

Before leaving this phase of the subject, the author expresses the hope that everyone having anything to do with inventions and patents will soon come to the realization that the almost wholesale manner in which patents have recently been invalidated can only result in defeating the very purposes of our patent laws; namely, the encouragement and stimulation of invention and ingenuity, and the inducement to inventors to make their inventions public.

If democracy is to survive the present emergency, invention and ingenuity must be encouraged and stimulated as they were never before in the history of the world. This necessarily means that the contributions of the inventor, who, in the final analysis, is the benefactor of all humanity, must receive due recognition. It is not sufficient that celebrations be held every so often in honor of the inventor as a class, or that monuments be erected to individual inventors long after they are dead. Justice to the inventor requires that patent protection be made to mean exactly what the founders of our nation intended it to mean, namely, a means whereby the inventor may receive a reasonable compensation for the time, effort and money that he may have expended in making available his contribution to the arts and sciences.

Creation of Favorable Patent Situation

In a previous paper, the present author pointed out that the patent policy of an industrial organization should not only be continuous but it should also be coextensive with the scope of the establishment's industrial activities. A favorable patent situation cannot, generally speaking, be based upon sporadic efforts to protect individual developments. All patentable details, variations, alternatives and improvements should be protected.

It was also stated that patent protection should not be considered merely as a minor detail to the business and technical aspects of an individual development. It must be considered as an integral part of every research and development project from the very beginning.

It was also stated that the creation of a favorable patent situation can be very much facilitated by the adoption of a progressive and liberal attitude toward the employee-inventor. Employers should inspire their men with confidence that they will be adequately compensated for worthwhile inventions. The inevitable result will be a marked increase in the number of inventions developed within the organization.

The creation of a favorable patent situation would also be greatly facilitated if the industrialist would adopt the golden rule as to his competitors' patented inventions; i.e., respect them as he would have his own inventions respected.

The industrialist should also adopt a policy of securing licenses, wherever possible, under his competitors' patents. In exchange he can grant licenses under his own patents. By exchanging licenses under patents, two competitors can put their inventions to work over a larger field and strengthen their respective positions as against third parties. The interchange of patent licenses is entirely legal, provided that it is not used as a means to restrain trade in violation of the anti-trust laws.

The industrialist should also endeavor to secure licenses under the patents of individual inventors. Many of the really important advances in the arts have been and are still being made by free-lance inventors. The industrialist who ignores this source of new products and of better and cheaper ways of doing things is the loser in the long run.

A Philosophy of Research

By Ernest Scheller, F.A.I.C.

THE progress that is being made in science and industry deserves a little reflection. We look to those research laboratories for these achievements and to those research men to bridge the gap between the dreams and reality.

We all know the fable of the goose that laid the golden eggs. That goose was given the same food and water of other geese, but it had the miraculous power of transmuting it into golden eggs.

So in the various fields of science, we find men receiving the same food and substance of education to a greater or lesser degree, but yet there seems to be so few that know how to go beyond the scope of their teachings—so few that can lay the golden eggs of invention and discovery.

Is this the fault of the educational system? I hardly think so. It seems to lie more in the individual. There seem to be requirements other than simply education and knowledge. Education is a great means, knowledge is a great power, but like money or power, it only fulfills its purpose when properly directed. It is this direction that causes the transmutation of the food into golden eggs.

What are these requirements of men that make nature reveal her secrets? Who are those explorers that blaze new trails in the realms of knowledge or those pioneers who follow the trails and broaden them into highways for industry? They are men with imagination and creative faculties, with determination and faith, with powers of vision and observation, with a capacity for work and a will to work and with intelligence to reason the significance and relations of things.

Thomas Edison, Louis Pasteur and Michael Faraday did not stop in one chosen field nor were they content to make one great achievement. Their genius was applied in many fields of endeavor with equal success and no matter what that field may be, success would surely be theirs. Why? Because they all have the above faculties to transmute the store of knowledge into golden eggs. Edison was the greatest inventor of all times. He was equally a good manager, a splendid organizer, a wonderful engineer and a scientist without a peer. His success was just a simple matter of applied intelligence plus his simple

faith that all things were possible. He showed to us that a thing appears only impossible because of our ignorance. When we recognize the absence of knowledge, we should then do as Edison—seek it from the only source—Mother Nature.

The Story of Stainless Steel

Some years back, I thrilled to the story told by James Critchett about stainless steel. Stainless steel owed its corrosion resistance properties to the addition of chromium and nickel and to the absence of carbon. However, all the efforts of metallurgists and scientists could not dispose of all of the carbon—.02 per cent remained stubbornly in the iron. During the various operations and processing of stainless steel, carbon would tend to segregate to the grain boundaries of the metal and greatly lower its corrosion resistance. When all attempts failed to remove this carbon, a search was then made for some metal that would combine with the carbon and remove its detrimental propensities. In that search they found that only one metal would serve that purpose, which was the comparatively rare metal columbium. Now after they found columbium was the metal, the question then arose where were they going to get sufficient quantities of it in order to serve the thousands of tons of stainless steel produced every year. To begin with, the metal was too expensive and second, there was not a sufficient source of supply. The battle was not even half won. The next step was to turn to geologists and prospectors to search all over the world to find a source of columbium. They finally did locate a deposit in a far-off region of Africa. But still they were faced with the problem of extracting this metal from the ore. Chemical engineers and metallurgists were put to the task and finally the battle was won. Columbium was made available in sufficient quantities for stainless steel.

There was no previous knowledge to guide these men in eliminating their difficulties in stainless steel, there was no source of supply of columbium and no means of extraction to which they could turn and look in books to find the answers. Theirs was faith and determination that somewhere and somehow the answer would be found. It opened a new path to knowledge. The story can well teach us that progress sometimes is only made by those who get off the beaten path.

Philosophers have told us that we cannot transcend our experience. Then how can we gain that vision of fulfilled desire. Only by experience. Not waiting for things to happen but to accelerate our experience causing things to happen quickly. In other words—experiment.

Experiment is nothing more than accelerating experience, causing things to happen quickly, effecting changes, varying the factors and noting the results. In the course of these changing conditions, we observe and pay particular attention to the manifestation of nature because she is full of surprises. After we have built up a fund of experience, generally crowding twenty years in a few months and supplementing a thousand years of the experience of other men, a light suddenly begins to shine and we begin to see how each tiny thread of knowledge can be woven into a beautiful pattern of a useful substance.

In the laboratory, we take the conception of our ideas and bring it into the embryo stage. When it has fully taken shape, it is born, severed from its mother and proudly brought forth for the world to see. As a baby it can neither talk nor walk, is quite helpless in fact, not alone being of any use. It has to be nursed, often times becomes ill and requires medical attention and sometimes dies. If all goes well, it learns to creep, to walk, to talk and later becomes quite able to help itself, but still it cannot support itself nor can it be thrust into the world. The days pass and the baby becomes a boy, the boy a youth, and the youth a man. Now he can leave the shelter of his home, set out on his own, bring additional earnings to the family and even marry and raise a family of his own. So an idea passes through the same stages: From its very conception, through the laboratory, the pilot plant, semi-commercial plant and finally a great industry which will reproduce other children to replace itself when it has outlived its usefulness.



Research in Defense

In the future, research will play an increasingly important part in determining not only which companies and industries but also which nations shall forge ahead. Chemistry is making nations more self-sufficient by showing them how to get along without materials found outside their borders. As a result, the mere possession of large natural resources is becoming less important than skill in utilizing available resources with the utmost efficiency. The competitive position of American industry in foreign markets will depend in no small degree upon relative technological improvements in production.

—BARRON'S

The Chemist—Earliest Chemical Periodical In English

By Florence E. Wall, F.A.I.C., Consultant,
New York.

Presented by title before the Division of
History of Chemistry at the 101st meeting
of the American Chemical Society, St.
Louis, April, 1941.

THIS year of 1941 marks the hundredth anniversary of two organizations whose interests have been associated with the development of chemistry in England: the Chemical Society of London, and the Pharmaceutical Society.

Immediately after they were organized, each of these Societies launched a publication to record its proceedings, neither of them choosing to utilize the medium of an independent monthly periodical called *THE CHEMIST*, which had been established in January, 1840, and dedicated to the interests of chemists, chemical manufacturers, and druggists.

According to the Editors, Charles Watt and John Watt, Jr.,

"... a paper on the plan of *THE CHEMIST* was much wanted. We came forward at the most desirable juncture and to our belief deserve the merit of having been the first laborer in the field.

"*THE CHEMIST* was the first periodical exclusively devoted to chemistry ever published in this country."

In making such a claim, these editors were both right and wrong. Either they were ignorant of, or they chose to ignore, a weekly periodical, also called *THE CHEMIST*, which had been established in London as early as 1824,

"... under an idea that the increasing importance of the science of chemistry, as well as the increasing desire among all classes for accurate knowledge, would make a weekly publication like ours acceptable . . ."

The first volume of this ambitious little journal comprises 448 pages—

eighteen issues—covering the period from March 13th to September 11th, 1824. Its object, as first proposed, was

“to give an outline of the principles of chemistry, with their numerous applications, as well as a history and description of all the arts which are connected with this science . . . Further . . . to make THE CHEMIST a repository of every valuable discovery, either in chemistry or the sciences connected with it, which might be made, either at home or abroad.”

This editor meant *chemistry* as we understand it today, although he gives as “its present meaning, ‘the science which investigates the changes which take place in bodies unaccompanied by sensible motion’.” To confirm this, he ran, on the title-page of the volume and at the head of each issue, the following verses, admittedly paraphrased from Akenside:

“ . . . Search, undismayed, the dark profound
Where Nature works in secret; trace the forms
Of atoms, moving with incessant change
Their elemental round; behold the seeds
Of being, and the energy of life,
Kindling the mass with ever-active flame;—
Then say if nought in these external scenes
Can move thy wonder? . . . ”

Judged by modern standards, THE CHEMIST was a rather unusual publication. It is obviously the work of one individual, but throughout its entire existence, there is no admission of his identity. There is no editorial page—no “mast-head” like those to which our modern editorial scapegoats are tethered—but there are many unsigned articles on timely topics, which could pass for editorials. From these contributions, and from good critical reviews of current periodicals, this editor was undoubtedly well informed on general chemistry.

An excellent idea of the state of chemistry at the time is obtainable from a series of twenty-four articles on *Chemistry as a Science*; a *Dictionary of Chemistry*, which during the life of the periodical was completed as far as J; and from many good line drawings, of which there was at least one in almost every issue. Additional material included reviews of contemporary scientific journals, in which the Editor does not hesitate to condemn his colleagues for their free use of the scissors and paste. However, he made free use of his “contemporaries”, himself, lifting many items of appreciable size from other journals, notably the French ones.

How that man did get around! He attended every scientific meeting,

and reported every lecture on chemistry given at the Royal Institution and the Mechanics Institution, spicing these accounts with some delightfully free opinions on the speakers.

The best sidelight on his personality comes from a perusal of his "Answers to Correspondents". Even as now, as evident in many British periodicals, the Editor's passion for anonymity was shared by many of those that wrote to the paper for one reason or another. Letters, and even published contributions, were signed by such pseudonyms as *Chemicus*, *Problematicus*, *Electricitas*, *Simplicitas*, *Anodyne*, *Juvenis*, *Chlorine*, etc., etc. All were graciously acknowledged and courteously answered, whether they bore brickbats or bouquets. For particularly scurrilous ones, he chided the writer, regretting politely that the letter was not suitable for publication. He ran down special information, even to the point of performing certain experiments to obtain a desired answer. Communications of any and every nature were encouraged (all to be post-paid, please!). Inquiries from "lady correspondents" were especially welcome, but always seemed to throw him into a flutter.

It was through the interest aroused by one of these published letters that the first Chemical Society came into being. This gentleman suggested that the Editor foster the organizing of such a Society, in which young interested chemists could pool their resources to purchase necessary materials and apparatus, and pursue their study of chemistry. "I should like the society to be respectable and select", wrote he, "and to meet at a stipulated number of times every week".

This was early in May, 1824. Other correspondents took up the idea, with various ones offering a place to meet, books for the nucleus of a library, and many plans for a series of programs to be followed in study and experiments. THE CHEMIST was to serve as a medium of communication among prospective members until the group could be properly organized. Finally, enough of them gave their real names and addresses for the body to take flesh. The declared objective of the new society was "to prosecute in common the study of chemistry in all its branches". It was to be financed by dues, set to meet the average means of those participating. Meetings were held to select a committee and draft the regulations; and at last, a formal meeting for the election of officers was set for August 12th ("His Majesty's birthday").

The first meetings, with scientific lectures, were held during the fall, and later developments were revealed in the program of addresses held at a large public meeting, late in November, when the newly elected

officers were inaugurated. The President was Dr. Birkbeck, already well-known as the President of the Mechanics Institution. His inaugural address is well worth reading, because of its perennial timeliness and the inspiration it carries to devotees of chemistry in any generation.

"... The study of chemistry should not be confined to learned men. It regulates the arts and the things of commerce useful to mankind. Besides, the only means by which a science like this can be cultivated with great success is to infuse a general taste and knowledge of it, and thereby engage numbers in its pursuit . . ."

The following bit was comforting—and prophetic:

"It is not out of place to note that this Society is not only not intended to be confined to *learned* men, but not even to *men* exclusively. Hitherto, ladies have conferred the honor of their presence upon all our public proceedings; and we are exceedingly desirous,—although it is not consistent with the present constitution of the Society—that they should hereafter become members. That they are well qualified for pursuing this branch of science I may adduce as evidence the very able essay by Mrs. Fulhame, 'On Combustion'—a subject, I may incidentally observe, peculiarly appropriate to the female sex, since their fame as incendiaries has not expired with the conflagration of Troy. In further evidence, I may adduce the 'Conversations on Chemistry', by Mrs. Marcet, which as an interesting and instructive elementary work for the uninitiated, has never been equalled. . ."

Incidentally, it was through the careful reading of all those inaugural speeches—well along in Volume II—that the name of the Editor of THE CHEMIST—at least his surname, Mongredieu—finally came to light; it was mentioned in some official tribute for his good work in helping to organize this *London Chemical Society*.

The second volume of this early CHEMIST was, in general, much better than the first. The Editor's avowed purpose throughout was to be fair to everyone, but he seemed to find it difficult now and then. If this seeming paragon can be said to have had a "pet peeve" it was against the factions he observed in the ranks of those professing a common devotion to chemistry. His summary of the situation holds a mirror up to the local lions and gives us an amusing long-distance reflection of what must have been a very confusing picture.

He had intended, it seems, to use the portrait of a famous chemist of the day as a frontispiece—a presiding genius—for his bound volumes. Admitting that the greatest shining light of the day was Sir Humphrey

Davy, he adroitly wiggled out of using his portrait by saying that it already decorated too many scientific volumes. However, perhaps he did not agree with the generally high opinion of the Exalted One. Observing that the chemists of the country were divided into several camps, he seems to indicate what he thinks of Sir Humphrey—and several others—in the following, elegantly expressed passage:

"... When we trace the subdivisions of those who cultivate the science, in our own country only, into different sects, we shall also find that for each there is some author or some discoverer who has peculiar claims on its respect and admiration. Those who delight chiefly in bold experiments, successful inventions, enlarged views, and comprehensive theories—who are not very fastidious about neatness of composition or correctness of detail, have no great reverence for ancient doctrines, no marked respect for received opinions, and who, never having been much drilled into knowledge, have little or nothing to unlearn, unanimously look on Sir Humphrey Davy as the greatest man of the age.

"Elegant bred scholars, however—university men—gentlemen in love with scientific correctness and precision, possessing a mathematical cast of mind, who, having been laboriously instructed in all the minutiae of science, prefer, perhaps, the Vice President of the Royal Society to the President, and look on Dr. Wollaston as a safer leader than Sir Humphrey Davy.

"Those who would jump into a knowledge of every branch of chemistry, unsparingly sweeping down whatever stands in their way, follow Dr. Ure. The inhabitants of the manufacturing districts, and those who study chiefly the chemical arts, go after Dr. Henry and Mr. Parkes; while those who are in love with abstract theory, delight in Dr. Higgins and Mr. Dalton. Drs. Thomson and Hope and Mr. Murray seem the leaders of the instructing sect of chemists, and all who wish to teach others put themselves to school under one of these eminent Professors. As there is what is called a Cockney school of literature, so there is a sort of superficial, confident chemistry, which may, perhaps, be styled the *petit maitre* school of this science; and of it, Professor Brande, with the aspiring Mr. Gurney, are the chiefs. . .

"Now the Editor of a publication which occasionally devotes its pages to each and all of these sects—records the discoveries of Sir Humphrey, the scientific explanations of Wollaston, the dogmatic comments of Ure, the feeble descriptions of Parkes, the short simple theories of Dalton—who bears in mind the instructions of one Professor, and repeatedly appeals to the compilation of another, and who does not disdain to levy contributions on the *petit maitre* school of chemistry, is dreadfully at a loss when it is necessary to place the bust of one of these gentlemen at the head of his pages, to show under what standard he serves. . ."

How is that for a gallery of delicately acid-etched vignettes of the leading "chemical lights" of the day?

Elsewhere, in a quasi-editorial on the *Illiberality of Scientific Men*, Editor Mongredieu states his opinion that "chemistry has no respect for principles of party or of sect among scientific men. . ."

" . . . Almost every scientific journal of any repute is in our country the organ of some sect or party and is much less interested to promote knowledge than to bolster up or propagate the reputation of individuals. There has been criticism of this in American publications.

Our aim is to mention these shortcomings, yet do justice to all."¹

THE CHEMIST did, indeed, follow its expressed policy with remarkable fairness, but anything so altruistic was evidently too good to last. In the *Introduction* to Volume II, which carried THE CHEMIST through to April 16, 1825, the Editor took sad leave of his public, announcing that it would forthwith be discontinued because of lack of support.

So much for the first manifestation of THE CHEMIST, (but what happened to that first Chemical Society?)

After fifteen years of desuetude, the name of THE CHEMIST reappeared in 1840 on the periodical mentioned at the beginning of this paper. Its title-page read:

The CHEMIST

or

Reporter of Chemical Discoveries and Improvements

and

Protector of the Rights of the Chemist and Chemical Manufacturer

Edited By

CHARLES WATT, ESQ.

and

Lecturer on Chemistry

and

JOHN WATT, JUN.

The tone of this new journal was established in the observation that " . . . That very numerous body, the drug trade, then possessed no journal

¹ Before the appearance of THE CHEMIST of 1824, matters chemical were treated in periodicals devoted to science (natural philosophy) in general. The *Philosophical Transactions* of the Royal Society had been flourishing since the inception of the Society in 1665; chemistry is covered in *Series A: Mathematical and Physical Sciences*.

The *Philosophical Magazine and Journal of Science* was started in 1814, as a combination of two earlier philosophical magazines; its second series covered chemistry, with mathematics, astronomy, natural history, and general science.

In the United States, *Silliman's Journal* (later the *American Journal of Science*) was founded in 1818. The first strictly chemical publication of this kind in English was an American offering—the *Memoirs of the Columbian Chemical Society* of Philadelphia, published in 1813. Since no later volumes were issued, it may be conceded that the more persevering CHEMIST does deserve the priority claimed for it as a periodical.

... No periodical ever espoused its cause in a case in which advocacy of a journalist might have been useful. . . " And in defense of the admittedly inadequate scientific knowledge of the kind of chemists in which they were interested these editors decided to bring out "a journal of chemistry, both scientific and applied to pharmacy and the arts."

From the first issue, it was obvious that to these editors the *science of chemistry* was still the same, but the *chemist* was the compounder and dispenser in the drug-store. Throughout the entire first volume there were frequent burning—vitriolic—editorials on the sad state of affairs which permitted so much overlapping of the duties and privileges of apothecaries, physicians, surgeons, chemists, pharmacists, and druggists. Earnest pleas were made for a good medical bill which would delimit the practice of each group, and a good Board of Inspection to examine both products and practitioners. The establishing of an organization for pharmacists, on the general plan of the British Medical Association was agitated violently, and when the Pharmaceutical Society was actually organized, it was hailed as the leading event of the year.

The Chemical Society of London was established in February, 1841, two months earlier than the Pharmaceutical Society, but its existence was completely ignored by THE CHEMIST. In fact, no mention of it seems to occur before 1844, when a sarcastic note appeared on it as the place where important persons preferred to present their papers.

The founding of the Royal College of Chemistry, in 1844, under the patronage of H.R.H. Prince Albert, and all the important events pertaining to it, were well presented.

THE CHEMIST of this period was a really good periodical, containing some original contributions, translations of important foreign articles, good abstracts, and many book reviews. It crusaded valiantly against adulterated drugs, for higher education for chemists (pharmacists), and for other noble causes. But through, and behind, and under everything was the undying enmity of its editors for the Pharmaceutical Society, its President, its journals, and its editors.

The perusal of an odd volume here or there in the series might raise a question in the reader's mind as to the reason for this constantly recurring Hymn of Hate; but a careful study of the whole series makes it only too evident. The Messrs. Watt had established their paper as an independent publication, but they espoused the cause of the pharmacists so staunchly that they probably expected THE CHEMIST to be adopted by the new organization, when and if it should be established. When,

however, the new Society immediately started its own publication, in direct competition with its former ardent advocate, the latter brought the battle-axe right out.

In all the abandon of untrammelled editorial license, many choice comments like the following found their way into print:

Vol. I (1840): "... The want of a journal devoted to chemistry, chemical manufacturing, and pharmacy has long been felt. There is not one adapted to the chemical reader. True, there are some miscellaneous works containing articles on various sciences and arts, and one or two others composed of dull and heavy subjects, or abstruse calculations, written expressly for those of seeming intelligence to gratify the inclination of their authors for dispensing profundity, and a limited number of readers. There is no record of chemical science. . ."

Vol. II (1841): (Of the founding of the Pharmaceutical Society): "... The mountains labored and brought forth a mouse".

"... All would-be chemists and druggists should have suitable education. . . This would put a stop to the cacklings of the apothecaries about the invasion of their rights by those they term ignorant imposters and pretenders, i.e., the chemists. They are still at their work. . . scribbling in their oracle and setting in motion their wonder-working old women who occasionally delight Exeter Hall with oratory and wisdom. . ."

Vol. IV (1843): There was no journal of chemistry when this was started, although one was much needed. . . Within a year, two other journals were established. One lasted only a few weeks. The second, started with the professed object of upsetting THE CHEMIST, under the auspices of parties personally inimical to us, has failed to attain that end. THE CHEMIST has gained the appellation of the leading chemical periodical in the United Kingdom. . . the standard work of science . . . an authority of high character. Rivals must be mentioned in contrast, not comparison. . . This volume is larger. . . to give readers all they need, so they will not have to buy competitive journals of inferior character.

"Chemistry. . . ought to form part of every liberal—we had almost said decent—education, . . . a subject which deeply concerns everyone as involving either the business of life or the enlargement of knowledge. Younger members are urged not to be content with puerile, ignorant, and twaddling transactions, attempted to be foisted on them by the agents of the Bloomsbury Square Society, or any other pretenders of this class.

Further on, the *Pharmaceutical Transactions*, J. Bell, Editor, was referred to as "... a heterogeneous collection of trash."

Vol. V (n.s. II) 1844: Article on "How to Concoct An Article for the Pharmaceutical Journal. The plan invariably adopted is:

Commence by saying that the subject is very important. Observe

that Dr. . . says; or if very learned, quote Berzelius and Liebig. Then conclude by saying that you have not carried your investigations any further but hope to do so soon. The President will then say that the Society is much obliged, but they cannot deviate from the London Pharmacopeia."

A particularly choice bit refers to a review of THE CHEMIST in *The Medical Times*:

"We are seldom disposed to notice the vituperative animadversions in which our contemporaries, mad by jealousy or soured by disappointment, may indulge. Fair criticism, be it in censure or in praise, on the part of those whose opinions we value, we should respect. The office of the critic, shorn of its impartiality, is a disreputable and infamous one. . . We have taken proper pride in the favorable reviews in over 300 journals. Lately there has been an exception. The editor of a two-penny journal, of small circulation, called *The Medical Times*, has twice thought proper to vent the ill-humor produced by want of success, on this journal. On the first occasion, making full allowance for the cause of his bitterness, we took no notice of the crabbed emanations from a fractious mind—we treated it with good-humored contempt the paltry skill of our puny assailant. Now, however, that this ill-conditioned individual has again attacked us, we feel it may be necessary to remind him of his own littleness and warn him of the necessity of more strict adherence to the truth. . ."

And so on, and on. This time, however, the editors were protesting too loudly. They had been accused by the other editor of lifting an article without credit; and while they admitted the fact, the beautifully embroidered "alibis" and fulminating abuse continued for another page.

But there came an odd hiatus in all this. Volume VII (1846) was edited by J. Higgs, and set an entirely different note. In 1847, however, the Messrs. Watt were back again. The customary editorial introduction to the volume made note of their having been "away for an interval of months owing to engagements which now no longer prevented them from performing their editorial functions." (As a purely gratuitous comment, offered from the security of almost one hundred years of perspective, this reader of those old files suggests that perhaps the editors spent those months of absence in jail. Or if not, why not?)

Time and space do not permit any detailed mention of the many interesting subjects discussed in this set of volumes of THE CHEMIST. Excepting one: the invention of photography. The word *photography* was adopted in 1841, as more suitable than the awkward "Daguerreotypy". *Photogenic* was also introduced, in its literal meaning, "developed by

light"; not, as in 1941, "a good subject for a photograph". The rapid succession of improvements makes interesting reading, and the alacrity with which this new invention was taken up by the public seems to have equalled that accorded to radio in our own generation.

There was evidently a lapse of another short period without THE CHEMIST, but it appeared once more, in 1849-1850, as a *New Series*, with a modified title-page, as follows:

The CHEMIST
A
Monthly Journal
of
CHEMICAL PHILOSOPHY
And of
Chemistry Applied to the Arts,
Manufactures, Agriculture, and Medicine
and
RECORD OF PHARMACY
Edited By
JOHN and CHARLES WATT
Volume I, New Series

This promised a wider scope than the previous form of the journal, to cover contributions on chemistry, chemical manufactures, agricultural chemistry, pharmacy, and good reviews of "... everything published at home or abroad, of interest to scientist, manufacturer, pharmacist, physician, apothecary, and anatomist. . . The 48 pages of THE CHEMIST will contain everything, so it will not be necessary to purchase any other chemical journal. . ." (Again the glint of the battle-axe!)

The editors fulfilled this promise. While the subject matter was largely chemistry, the main interests were still pharmaceutical and medical, concerned with adulteration of drugs, sanitation, the epidemic of cholera. Developments in photography and electricity, and revisions in the patent laws were topics of major importance.

The Great Exhibition of Industry of All Nations, was opened on May 1, 1841, under the patronage of H. R. H. Prince Albert. After one whimpering complaint about the lack of press passes for the scientific

papers, the exhibition was well covered. Full lists were published of the prize winners among the exhibitors of chemicals; the United States was represented by Powers, Weightman (organic chemicals), and Wetherhill and Bro. (various salts).

In 1854, THE CHEMIST was again reorganized, and appeared in "an entirely new form—all different but the name" (and the Editors). Several departmental editors were added to the staff, and many new applications of chemistry—agricultural, analytical, forensic, industrial, organic and inorganic, as well as public health, physiology, pathology, materia medica and therapeutics, photography, metallurgy—were covered in original articles, translations or reviews. Personalities were out; the old feud with the Pharmaceutical Society seemed to have been forgotten, and its doings were listed faithfully along with those of all the other scientific and technical societies.

During five years in this metamorphosis, THE CHEMIST steadily advanced, giving more and more original and valuable contributions by more important names, and gradually assuming the character of the chemical journals we know today. Possibly there was too much competition from the periodicals of the Chemical Society, and others; but anyway, in 1858, while it was valiantly covering the whole field of chemistry, THE CHEMIST disappeared without warning or farewell.

The title seems not to have been used again in England. An AMERICAN CHEMIST, which flourished from 1870-1877 was discontinued when the American Chemical Society decided to publish a journal.

But THE CHEMIST is blessed in reincarnation. After a lapse of another fifty years—and over a hundred after its original appearance—the name was resurrected for its current manifestation as the organ of THE AMERICAN INSTITUTE OF CHEMISTS.²

Broken or complete sets of these various early series of THE CHEMIST are available in many public or university libraries throughout the country. When and if they can be found, they deserve a look, both because they are so entertaining in themselves, and because it is always an interesting and profitable experiment in time to slip back, mingle with the spirits of our professional forebears, and learn at first-hand, what so many kinds of chemists thought and did about so many kinds of chem-

² Note: The name was suggested by Albert P. Sachs, F.A.I.C., then serving as editor, and it first appeared on the issue of December, 1923. He was succeeded by Miss Wall who served as editor from 1929 to 1931.

istry during the 19th century—"An age", said the new President of that old London Chemical Society, "unquestionably distinguished from all preceding periods by the sudden and extensive improvements which the human mind has recorded".

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William G. Crockett

THE AMERICAN INSTITUTE OF CHEMISTS has just been informed of the death of William G. Crockett, F.A.I.C. on October 29, 1940. Dr. Crockett was born on January 9, 1888, at Tazewell, Virginia. He studied at Hampden Sydney College and Columbia University from which he obtained the Phar.D. degree and at New York University from which he received the M.S. degree. He was a chemist in the Department of Health of New York City for two years; with E. R. Squibb and Sons for one year, and then entered the Chemical Warfare Service in 1918, serving the following year with the Du Pont Company at Wilmington, Delaware, and as professor of pharmacy at Baylor University in Dallas, Texas, in 1920. He became Professor of Pharmacy at Medical College of Virginia in 1920 and held this position until his death. He specialized in toxicological and medico-legal analyses, and as a consultant on the analysis of patent and proprietary medicines and toxicological analyses. He was a member of the Revision Committee, *United States Pharmacopoeia* 1930-1940, president of the Association of Colleges of Pharmacy, 1937, member of the Board of Reviews of Scientific Papers, for the Journal of the American Pharmaceutical Association, 1935-1940; and secretary of the Virginia section of The American Chemical Society, 1922; editor of *The Bulletin*, 1929; chairman, 1931. He became a member of THE AMERICAN INSTITUTE OF CHEMISTS in 1938.

Albert M. Smoot

THE AMERICAN INSTITUTE OF CHEMISTS records with deep regret the death of Albert M. Smoot on April 18, 1941.

Mr. Smoot was born March 27, 1867, in New York, N. Y. He held no university degrees but diligently studied chemistry and metallurgy until he became highly proficient in these subjects. He gave fifty-eight years of service to Ledoux and Company, Inc., New York, N. Y. He held the position of vice-president and technical director of this company at the time of his death, and was well known for his publications in the field of metallurgy.

He was a member of The American Chemical Society, The Electro-Chemical Society, The American Institute of Mining Engineers, The Institute of Metals, The American Society for Testing Materials, The Association of Consulting Chemists and Chemical Engineers, and the National Society of Professional Engineers.

Mr. Smoot became a charter member of THE AMERICAN INSTITUTE OF CHEMISTS when it was founded in 1923.

Robert E. Rauh

THE AMERICAN INSTITUTE OF CHEMISTS records with deep regret the death of Robert E. Rauh on April 5, 1941. He was born in Nurnberg, Germany, April 26, 1876, and was educated in chemistry in that country. Until 1915, he was a partner in the firm of Ludwig, Alfred, and Robert Rauh of Nurnberg, manufacturers of resinous products. In 1915 he came to the United States and established the firm of Robert Rauh, Inc., of 488 Frelinghuysen Avenue, Newark, N. J., where he specialized in resinous products until his death.

Mr. Rauh became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1936.



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<i>New York</i>	<i>Niagara</i>	<i>Philadelphia</i>	<i>Washington</i>
MARSTON L. HAMLIN	A. W. BURWELL	GILBERT E. SEIL	ALBIN H. WARTH

June Meeting

The 181st meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on Wednesday, June 11, 1941, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 6:30 p.m.

Dr. Harry L. Fisher presided.

The following officers and councilors were present: Messrs: S. R. Brinkley, F. G. Breyer, H. L. Fisher, M. L. Hamlin, H. G. Knight, R. J. Moore, H. S. Neiman, W. T. Read, F. D. Snell, and A. H. Warth. Mr. M. R. Bhagwat, Dr. Gustav Egloff, Dr. W. H. Gardner, Dr. Donald Price, and Miss V. F. Kimball were present.

In the absence of the treasurer, the secretary read the treasurer's report, showing a total of cash and bonds on

hand of \$6099.58, with \$381.33 bills payable, and upon motion made and seconded, this report was accepted.

A resolution calling the situation of chemists with reference to the draft to the attention of the Deputy Director of the Selective Service System, passed by the New York Chapter at its meeting on May 23rd, was presented; and upon motion made and seconded, approved by the Council with the suggestion that the word "essential" be substituted for the words "more important" in the next to the last line of the resolution.

A resolution recommending the permissive licensing of chemists, passed by the New York Chapter at its meeting on May 23rd, was presented; and upon motion made and seconded, the resolution was approved with the request that

the New York Chapter and the national committee cooperate in publicity, strategy, and activities with respect to the licensing of chemists.

Upon motion made and seconded, a bill from Dr. Read for \$129.00 covering the expenses of the local committees of the Committee on Membership was approved for payment.

Dr. Snell reported for the New York sub-committee on Licensing.

The following new members were elected:

FELLOW:

Bahnsen, Monroe J.

(1941), *Assistant Director of Research*, Ferro Enamel Corporation, Cleveland, Ohio.

Bradstreet, Raymond B.

(1941), *Analytical Research Chemist*, Standard Oil Development Company, Linden, New Jersey.

Caryl, Coleman R.

(1941), *Chemist*, American Cyanamid Company, Stamford, Connecticut.

Diwoy, Fred F.

(1941), *Foreman*, Asphalt Department, Standard Oil Company of Indiana, Wood River, Illinois.

Gladstone, Martell M.

(1941), *Chemist*, Emulsol Corporation, Chicago, Illinois.

Gray, Thomas D.

(1941), *Chemist*, Western Sugar Refinery, San Francisco, California.

Johnson, Clarence A.

(1941), *Associate in Physiological Chemistry*, College of Medicine, Chicago, Illinois.

MacMasters, Majel Margaret

(1941), *Associate Chemist*, Northern Regional Research Laboratory, U. S. Department of Agriculture, Peoria, Illinois.

Metcalf, John D.

(1941), *Senior Research Chemist*, Shell Oil Company, Inc., Houston, Texas.

Murray, James A.

(1941), *Chief Chemist*, Warner Company, Devault, Pennsylvania.

Olson, Harold M.

(1941), *Chief Chemist*, Philadelphia Plant, Harshaw Chemical Company, Philadelphia, Pennsylvania.

Pierce, Leo F.

(1941), *Director*, L. F. Pierce Laboratories, Los Angeles, California.

Scofield, Francis

(1941), *Chemist*, National Paint, Varnish and Lacquer Association, Washington, D. C.

Skett, Anthony

(1941), *Director of Research*, American Gum Importers Association, Inc., Brooklyn, New York.

Tauber, Henry

(1941), *Research Biochemist*, Schwarz Laboratories, Inc., New York, N. Y.

Silver, Raymond P.

(1941), *Research Chemist*, American Cyanamid Company, Stamford, Conn.

ASSOCIATE:

Frishe, William C.

(1941), *Instructor in Chemistry*, Rochester Junior College, Rochester, Minnesota.

JUNIORS:

Doherty, Harry G.

(1941), *Research Chemist*, Socony-Vacuum Oil Company, Paulsboro, New Jersey.

Hiler, Malvern J.

(1941), *Research Chemist*, Sharples Solvents Corporation, Wyandotte, Michigan.

Upon motion made and seconded, Steven Levinos was raised from Junior to Associate.

Dr. Warth reported that the Washington Chapter wished a twenty per cent rebate on dues instead of the ten

per cent rebate now given. After discussion, the council decided to make this request a special order of business at the September meeting. The treasurer was requested to make relates to chapters quarterly.

Dr. Warth discussed plans for the

organization of an INSTITUTE Chapter in Baltimore.

A letter from Dr. Frey was read regarding the plans of the Committee on Economic Welfare.

There being no further business, adjournment was taken.

Applications for Membership

Final action will be taken by the National Council, at its October meeting, on the following applications:

For Fellow:

Burr, Eugene Dewitt

Assisat Professor of Chemistry, South Dakota State College, College Station, Brookings, South Dakota.

Damon, Glenn H.

Associate Professor of Chemistry, Michigan College of Mining and Technology, Houghton, Michigan.

Milner, Reid T.

Principal Chemist, Northern Regional Research Laboratory, United States Department of Agriculture, Peoria, Illinois.

For Associate:

Eckstein, Vincent F.

Instructor in Organic Analysis, Polytechnic Institute of Brooklyn, Brooklyn, New York.

For Junior:

Tames, Walter

Research Chemist, Ansbacher-Siegle Corporation, Rosebank, Staten Island, New York.

CHAPTERS

New York

Chairman, Donald Price

Vice-chairman, Elmore H. Northey

Secretary-treasurer, Milton Burton

New York University

New York, N. Y.

Council Representative, Marston L. Hamlin

Howard S. Neiman, Secretary of the INSTITUTE, attended the Coastal Empire Paper Festival in Savannah, Georgia, this spring. The Festival particularly commemorated the work of the late Dr. Charles H. Herty whose activities

made possible the development of paper making in the South. Mr. Neiman predicted that many new chemical industries would spring up in the South, with its abundant supply of minerals and raw materials.

Niagara

Acting Chairman, Alvin F. Shepard
Secretary-treasurer, Wilbert A. Herrett
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Hamburg, N. Y.
Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*
News Reporter to THE CHEMIST, Margaret C. Swisher

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Chairman, Edward L. Haenisch
Vice-chairman, J. M. McIlvain
Secretary-treasurer, Clinton W. MacMullen
Rohm and Haas Company
Philadelphia, Penna.
Council Representative, Gilbert E. Seil
News Reporter to THE CHEMIST, Kenneth A. Shull

NORTHERN LIGHTS

By Howard W. Post, F.A.I.C.

Recent progress in war time industries is summarized in part in a recent issue of *Canadian Chemistry and Process Industries* as follows:

"To present a complete picture of our explosives and chemical programme at this stage is very difficult. The main measure of industrial achievement is capacity and production; yet it is obvious that such data cannot be presented in detail at this time. In many cases it even seems undesirable to give plant locations although, in recent months, much information of this sort has been available through public documents and in the Press.

"At the outset, it can be said that Canadian chemical industry has done a

remarkable job and done it with great speed. In numbers and size of plants, in the variety of chemical products now being manufactured, in volume and output, Canada's explosives and chemical accomplishment by the end of this year will be relatively much greater than in the 1914-18 period, not only as measured by Canada's greater industrial development, but also in relation to chemical industry itself. The production of military explosives in 1941 will exceed the total production from 1914-18.

"Plans for the production of about a dozen new chemicals and explosives have been started, most of them completed, and these products are being used either as intermediates in the programme or shipped as finished products.

"A brief outline of present developments is as follows:

"Although several large explosives plants were built in Canada and operated from 1914 to 1918, none of these was maintained after the last war. The equipment was used for other purposes or scrapped; buildings were, almost without exception, torn down. There was little or no market for military explosives in Canada, and from 1918 to 1938 the only activity in this field of the chemical industry in Canada was the production of blasting explosives. Fortunately, just prior to the outbreak of war, the Department of National Defence gave some financial assistance to Canadian Industries Limited for the erection of a small H. E. plant at Belœil, Quebec, and also for a plant for the manufacture of the small peacetime requirements of propellents. The existence of these small plants proved

of the greatest value in making available experience of modern methods of manufacture and as a training school for operators and inspectors. This plant has been steadily producing since the outbreak of war.

"The first large project, a modern H. E. plant and a propellant plant, was authorized in February, 1940, and a site in Ontario was selected as the best location. Defence Industries Limited—a subsidiary of Canadian Industries Limited, created to take care of war business—was entrusted with the design, erection and equipment of the plants, and in November, 1940, nine months after authorization was given, the first lots of H. E. were manufactured and were started on their journey overseas. Both H. E. and propellant plants are now in full production and the monthly production attained is considerably over rated capacity."

BOOKS

MODERN COSMETICOLOGY. By Ralph G. Harry. *Chemical Publishing Company*. 1940. 6¼" x 9½". 288 pp. \$5.00.

The book presents a general treatment of the subject of cosmetics and contains much valuable information on both raw materials and finished products. There are chapters on all the more important classes of preparations. Over three hundred formulas are given but obviously many have been taken from trade literature. The effect of cosmetic materials on the skin is considered and is expanded beyond the usual list of raw materials to include vitamins, 'skin foods', hormones and

allergy. There is a short chapter on the histology of the skin.

As a reference book its usefulness would be greatly enhanced by the inclusion of a list of commercial sources of the numerous special ingredients mentioned by trade name only. There should be more attention to the specification of quality for some types of materials. Paraffin waxes should be designated by melting point; mineral oils by viscosity; certain vegetable oils by type of processing, etc.

To justify the claim that the work is comprehensive, more attention should be given to laboratory procedures and manufacturing methods so essential to bringing out distinctive quality in cosmetics. Usually several formulae are

given with no indication of what may be expected in the characteristics of each. In several instances, a series of four or five formulae is given with no specific information and close examination reveals that they all contain a common characteristic. For example, four out of five in one group formulae use raisin seed oil and three out of four in another group used avocado oil.

Technically the book yields disappointments both as to style and facts. Calgon is described as sodium hexameta phosphate plus sodium pyrophosphate. In one paragraph the reader is informed of the significance of the formula for water in a manner obviously assuming that he lacks even elementary knowledge of chemistry. In the next paragraph he is carried into a theoretical exposition of ionization and the significance of pH. It is stated in this discussion that "in aqueous solutions the introduction of a third substance whether gas, liquid, or solid may disturb the relation ratio of H and OH ions. As however their sum is always equivalent to $1/10^{-14}$ approximately, it is sufficient to state the hydrogen ion concentration alone, from which the hydroxyl concentration may be determined by simple subtraction."

The busy cosmetic chemist will find much of value in the book. It contains a large amount of practical and recent material not otherwise available to many and certainly not to any without extensive searching.

—A. LLOYD TAYLOR, F.A.I.C.



EXPERIMENTS IN COLLOID CHEMISTRY, by Ernst A. Hauser and J. Edward Lynn. McGraw-Hill Book Company, Inc. \$2.00.

This first edition of a laboratory manual in colloid chemistry is based on

five years' experience of the authors in class room demonstrations and laboratory courses, given by the Department of Chemical Engineering, at the Massachusetts Institute of Technology.

It includes a few historical experiments, and, in the succeeding fourteen chapters, covers experiments illustrating a large variety of colloidal phenomena, such as the preparation of colloids, their optical properties, particle size determination, gel formation, emulsion, etc. In each case, the directions are given with the utmost clarity, so that students will be able to follow them with ease, and practical certainty of success. Some theoretical discussion is included, although relatively little.

There is a good author index, as well as a good subject index, and a number of citations to the literature are given.

Any student working through the course will have a thorough acquaintance with colloidal phenomena. Those of us who completed our studies before such courses were given will find the directions highly instructive for experimental work in this field.

The book is recommended for a place on the shelf of every laboratory, as well as for use in laboratory courses in colloid chemistry.

—KARL M. HERSTINE, F.A.I.C.



HANDBOOK FOR CHEMICAL PATENTS. By Edward Thomas. Chemical Publishing Company. 1940. $5\frac{3}{4}$ " x $8\frac{1}{2}$ ". 270 pp. \$4.00.

In this compact handbook Mr. Thomas presents patent law so far as it is peculiar in dealing with chemical patents and other patents which issue without drawings.

The book follows, to a large extent, the outline of the author's Law of

Chemical Patents, and, strange to relate, turns out to be interesting reading.

This handbook cites about eight hundred pertinent new cases decided since his larger book was issued and so forms a supplement to that book.

Each chapter presents a readable summary of the general principles which underly the chapter and then presents in digest form an outline of important points.

Reading the book should give chemical research men a new and useful outlook on research programs.

Periodicals Requested

The Straubenmuller Textile Evening High School, 351 West 18th Street, New York, N. Y., will open the fall and winter term on September 8, 1941. Instruction is provided in all branches of academic, technical, textile, shot, and mill subjects. Instruction is free. Registration will begin September eighth. Dr. William H. Dooley, principal, requests contributions of unneeded samples of fabrics, yarns, dyestuffs, pattern books, periodicals, etc., which could be used for the students to refer to during their leisure time.



The September issue of *Fortune Magazine* carries the third and final article of a series devoted to the Union Carbide and Carbon Corporation. This third article reviews the growth of Carbide's Chemical Division during a period when most industries were having hard sledding, and shows how Carbide continues prospering whether there be peace or war.

The American Society for Testing Materials, Philadelphia, Pennsylvania, has published a tentative standard covering methods of reporting results of analysis of industrial waters. Copies of the method may be obtained from the Society at twenty-five cents each.

Will a Secretary Go to Heaven?

- If a Secretary writes a letter, it's too long.
- If he sends a postal, it's too short.
- If he doesn't send a notice, he is lazy.
- If he attends a committee meeting, he is butting in.
- If he stays away, he is a shirker.
- If he duns the members for dues, he is insulting.
- If he fails to collect the dues, he is slipping.
- If he asks for advice, he is incompetent.
- If he does not he is a bull-head.
- If he writes his reports complete, they are too long.
- If he condenses them, they are incomplete.
- If he talks on a subject, he is trying to run things.
- If he remains quiet, he has lost interest in the meetings.

Ashes to ashes,
Dust to dust,
If others won't do it,
The Secretary must!

Chemists At Work In Australia

By R. H. Carr, F.A.I.C.

It was the writer's privilege to spend the year of 1938-39, on leave of absence from Purdue, in far away Australia. To many people that country will always remain a dreamland of strange animals, customs, and people who live under unusual conditions. It was somewhat of a surprise to me to find things so progressive with many modern appliances in use, many of which were made in the United States.

Since the writer's first interest is chemistry, especially agricultural chemistry, I noticed many possibilities of "chemurgic" applications, such as the making of insecticides from poisonous plants, and changing wheat and wool, the biggest money values, into less bulky and higher cash value products. In my opinion there is a big field ahead for those in Australia who are chemically trained.

Chemical Organizations

The main chemical journal is entitled, *The Australian Chemical Institute Journal and Proceedings*. It is the official monthly publication for the six states of the Commonwealth. Each of the six states, Victoria, New South Wales, Queensland, South Australia, and West Australia have separate chemical organizations, all of which are affiliated with the Australian Chemical Institute. Tasmania, the exception, has only a representative. The organization has officers called, president, vice-president, honorable general secretary, and honorable general treasurer. In addition there are such offices as editor, and councillors. In 1938 there were eight hundred twenty-seven members.

Chemical Items of Most Interest

The chemical articles of most interest to the Australians, because of the available natural products, are minerals. Their value as to the relative abundance in the country is in the order given; gold, coal, lead, silver, iron, tin, copper, and zinc. There is much interest, also, in other available minerals such as bismuth, arsenic, cobalt, chromite, manganese, opals, sapphires, platinum, and radio-active ores.

It is evident that such a wealth of minerals would develop much interest in metallurgy and encourage interest in chemistry. The interest is further encouraged by prospecting tours lasting about one year which are in charge of competent mining engineers. After a few months on these trips in the "out back" many a tenderfoot young man experiences what it takes to become a real mining engineer.

Sugar Chemistry

In the tropics of the State of Queensland the volcanic soil and climatic conditions are favorable for the growth of sugar cane and large areas are used to grow this plant. Among land owners there is much competition to secure permits to grow cane, because it yields a good revenue per acre. In 1938 there were thirty-three sugar mills in that region. The Sugar Technologist's Society, which controls the cane products, meet in conference for one week annually to discuss their difficulties. The problems of this most thriving industry are of special interest to the chemists as they discuss plant breeding for high sugar content, rat and grub worm pest

control, fertilizer and irrigation needs of the soil, the making of cattle food press cake and alcohol for motor fuel from the molasses of the cane.

Chemicals from Sewerage

In some respects one of the most interesting applications of chemical control observed had to do with the utilization of sewerage from Melbourne, a city of a million inhabitants. In most places, regardless of the fertilizing needs of the land, the mineral wastes of city sewerage are dumped into the ocean where they apparently are lost forever in a vast water way.

In Melbourne the raw sewerage is conducted sixteen miles from the city, where the nutrient elements are converted into grass which covers an area of ten square miles. The grass in turn is converted to horses, sheep, and beef. The amount of grass produced per acre by this sewerage is remarkable in terms of the number of head of cattle which it will support per acre.

The chemist's report for 1934 is as follows: In the fifteen thousand (15,000) million gallons of sewerage per year there are four thousand six hundred sixty (4,660) tons of nitrogen. Of this amount of nitrogen two thousand seven hundred sixty-five (2,765) tons are in the form of ammonia, and one thousand eight hundred ninety-five (1,895) tons are present as organic nitrogen called "blood manure". This is equivalent to thirteen thousand eight hundred (13,800) tons of ammonium sulphate per acre, and nineteen thousand (19,000) tons of "blood manure" per year. The phosphates amount to four thousand five hundred (4,500) tons of superphosphate or the equivalent of nine hundred twenty-four (924) tons of phosphoric anhydride per year.

This was not all the nutrient, however, as attested by the blades of grass that

crowd for standing room on each square foot of the space fertilized by the sewerage. The super growth of grass suggests that hormones or some plant stimulators have had time to develop and add greatly to the production per acre. Phosphates are seriously lacking in many soils, especially in Australia and New Zealand, and to have such great amounts lost in the ocean calls for action to save this essential element.

Wool Chemistry

A whole book might be written on the chemistry of wool as it is being worked out on some of the one hundred twenty million sheep in Australia with the help of the X-ray investigations on the structure of wool, being done at the University of Leeds, England.

It has been noted that an increase of the protein diet of sheep has brought about a big increase in the amount of wool grown. A change from a basal level of sixty grams of protein per day, a maintenance ration, to about twice that amount resulted in an increase of fifty-eight per cent in wool grown; an increase of three times the basal protein caused an increase of ninety-five per cent, whereas an increase of five times the basal amount resulted in one hundred forty-five per cent increase in the amount of wool grown.

Recent chemical work on the wool by dry chlorination has shown the possibility of greatly reducing the shrinkability, which is one of its undesirable characteristics.

An improvement in the nutritive value of the pasture will certainly affect the fineness of the fleece. However, that change may be accomplished by using a different type of sheep on these areas.

In connection with pasture studies now in progress in relation to the wool quality it is found necessary to go "back to the soil" for the final answer. Many sheep growers contend that "sown pastures ruin the wool". The soil type and strata appear to hold the "key" for best wool fiber yield, and pastures that do not look promising often have what it takes to produce wool that tops the world in quality.

Conclusion

Space will not permit a further discussion of chemistry at work in Australia except to say that in many respects it is similar to that found in the United States. Only the more unusual phases have been mentioned in this article. The soil itself, much of which is of red volcanic or sandy type, may be partly responsible for great differences in animal and plant life found there. Soils are sometimes de-

ficient in calcium, and magnesium, and in such "trace elements" as copper, boron, cobalt, zinc and manganese. These have modified the ash content of the plants with a resulting effect on teeth and health of animal life. Notably the lack of soil cobalt in places has been serious on the growth of sheep.

Australia, on the whole, is a remarkable country of sunshine and has produced a vigorous race of tall people, well capable of looking out for themselves.

NOTE: Dr. Carr served as delegate to the Association for the Advancement of Science, at Canberra, Australia, in January, 1939. He spoke at chemical meetings on the subject of "Chemurgic Chemistry," and found that this topic was especially appreciated, as Australians have not yet given much attention to this phase of chemistry.

Discharge of Enlisted Men Who Are Key Employees In Industry

1. Reference is made to Paragraph 1.c Memorandum (SSF-717), Subject: War Department policy regarding discharge of Selectees from active service dated June 16, 1941.

2. To make effective the provisions of that paragraph the office of The Under Secretary of War issued on May 23, 1941, the following information bulletin:

"1. The current defense program provides for the mobilization and training of a military force and the expansion, operation and maintenance of the industrial and utility facilities essential in the production and distribution of national defense items. The requirement by industry of the necessary key

civilian employees is comparable to the requirement of trained military personnel by the armed forces.

"2. The civilian employee, who held a key position prior to his induction or enlistment, and whose services are now required by his former employer by reason of the expansion of industrial activities or the shortage of skilled employees in his classification, may be relieved from military service in order that he may return to his civilian position. However, it must be established to the satisfaction of the War Department that the soldier is in fact a key man specifically needed in the production of essential items or in the operation or maintenance of essential utilities or services, and that there is a

shortage of technicians in his category. *The company also must agree to re-employ the soldier immediately upon his release from military service.* The action taken will depend upon the merits of each case and upon the needs of the military service.

"3. Modern armies require large numbers of skilled technicians of all categories. Even so, there will be instances in which the technicians are not assigned to the military duties for which they would appear best qualified by reason of civilian training. These exceptions may be due to the exigencies of the military service or to the personal equation. *In any case, apparent misassignment will not be entertained as a reason for release from military service.*

"4. A separate request addressed directly to The Under Secretary of War, will be submitted in the case of each soldier.

a. It must be initiated and executed under oath by the responsible head of the firm or agency by which the soldier was employed at the time of his entry into the military service.

b. The request will be submitted in triplicate in the form of an affidavit, executed before a Notary Public, who will set forth under his signature the date of the expiration of his Notary commission. *Only the original need be signed.*

"5. In so far as each item applies, the following information will be included in each request:

a. Full name: (e. g., John Henry Smith, not John H. Smith)

b. Age:

c. Home address: (At time of entry into military service)

d. Marital status and number, ages and relationship of dependents:

e. Number and address of Selective Service Local Board: (If inducted under the Sel. Serv. Act)

f. Length of time with the firm and date on which soldier was dropped from payroll:

g. Nature of employment: (Give payroll classification of employee, and describe in detail the nature of his duties)

h. Salary or wages paid soldier at time of leaving the firm:

i. Reason soldier left firm's employ: (Inducted under Selective Service; enlisted in National Guard; enlisted in Regular Army; laid off; quit; etc.)

k. Steps taken to obtain deferred classifications: (Selective Service men, only) (Give details)

m. Present location of soldier, if known: (It will materially shorten the time required to consider request if the military unit and station of the soldier is stated)

n. Previous experience of soldier prior to employment by the firm:

o. Statement in justification of classification of soldier as key employee: (Include such information as number of employees of similar classification and scarcity of replacements. (Specifically, state why this former employee is considered so essential as to justify his release from military service.)

p. Additional information: (Submit such additional information that will assist in proper consideration of the request)

NOTE: No blanket classifications are contemplated. Action on each request will be based upon the information submitted under the headings indicated above. The form outlined should be followed even to the lettering of paragraphs. Note further:

This instruction circular refers exclusively to enlisted men of the U. S. Army. It does not apply to Reserve Officers or to U. S. Navy personnel.

"6. Reconsideration: Reconsideration may be requested at any time. The request should comply with the instructions and form outlined in Paragraphs 4 and 5, and it should be complete.

"7. Change in status of released soldier: Should favorable action be taken by the War Department, the firm is obligated to inform the Adjutant

General of the Army, Washington, D. C. by letter:

a. The date upon which the soldier re-enters the employ of the firm.

b. The date dropped from the payroll should the soldier thereafter leave the firm and the reason therefor."

3. It is requested that full publicity be given the contents of the information bulletin above referred to so that employers engaged in the production and distribution of national defense items, may be fully aware of the policy with reference to the release of key men.

CHEMISTS

The Eighteenth Exposition of Chemical Industries will be held at Grand Central Palace, New York, N. Y., December first to sixth. Ninety-five per cent of the space has already been engaged. M. C. Whitaker, F.A.I.C., vice president of the American Cyanamid Company, is again chairman of the Advisory Committee for the Exposition.



A new firm of technical consultants, Crowley and Bennett, has just been announced. The principals are Clyde A. Crowley, F.A.I.C., and Harry Bennett, F.A.I.C., the former well known for his work in electro-chemistry; and the latter as editor-in-chief of the *Chemical Formulary* and work on emulsions, special formulac and other chemical developments. Chicago headquarters are at 6803 N. Clark Street. New York headquarters are at 228 King Street, Brooklyn, N. Y.

Roland A. Bosce, F.A.I.C., director of laboratories of Endo Products, Inc., Richmond Hill, New York, who holds a commission as lieutenant in the U. S. Naval Reserve, has been ordered to report to the Navy Department, Bureau of Aeronautics, Washington, D. C. The assignment is concerned primarily with the research and development of organic and inorganic materials with emphasis on inorganic coatings, synthetic substitutes for materials now used, and development of suitable plastics to replace materials now used, etc. He will be primarily responsible for guiding research and development along certain chemical lines and the initiation of new research projects.



Edward L. Haemisch, F.A.I.C., head of the Chemistry Department at Villanova College, discussed a paper on Standards in Secondary School Science at a meeting of the Pennsylvania Chemical Society, held at State College, May thirty-first.

EMPLOYMENT

Chemists Available

ORGANIC RESEARCH CHEMIST. A.A.I. C., M.A. in Chemistry. Columbia 1936. Experienced in organic research pertaining to lignin and cellulose materials. Also testing or organic and inorganic materials. Development of methods of analyses. Please reply to Box 71. THE CHEMIST.

CHEMIST, J.A.I.C., A.B., M.S. (June 1941) Phi Beta Kappa, two years of college work in organic chemistry, qualitative, quantitative analysis, courses in qualitative organic analysis. Successful university research. Laboratory position desired. Please reply to box 51, THE CHEMIST.

PROFESSOR, F.A.I.C., F.A.A.S., Ph. D., Cornell, successful department head small state college, desires change to teaching position with opportunity for advancement on basis merit displayed. Age 37, married, two children, 16 years' teaching experience, excellent references, available short notice anywhere in United States. Please reply to Box 31, THE CHEMIST.

CHEMICAL ENGINEER, F.A.I.C. Age 35. Varied experience with Bureau of Standards, Du Pont and others qualifies me for semi-works development, process trouble shooting, cost reduction work in many fields. Mechanically minded; analytical viewpoint. Please reply to Box 21, THE CHEMIST.

COMMERCIAL CHEMIST, F.A.I.C., Cornell. Twenty years' experience supervision and administration details. Coal tar, nitrogen soils and fertilizer, plastics, development works, formulating materials specifications. Please reply to Box 23, THE CHEMIST.

COLLEGE TEACHER, American, Ph.D., F.A.I.C., Sigma Xi. Inorganic analytical, organic and industrial chemistry. Several years' university teaching, six years' experience in the chemical industry in heavy chemicals, analytical methods, control, supervision. Publications. Location anywhere. Please reply to Box 25, THE CHEMIST.

CHEMICAL ENGINEER, F.A.I.C., B.Sc., Ch.E., 20 years' experience in management, production, development and consultation. Please reply to Box 41, THE CHEMIST.

CHEMIST-SALESMAN, B.A. chemistry 1935, M.S. 1937, experienced in sales work. Looking for sales or distributorship of chemical products in Philadelphia and Eastern Pennsylvania, age 30, reliable, responsible and aggressive. Please reply to Box 43, THE CHEMIST.

CHEMIST, B.A. chemistry 1935, M.S. 1937. Familiar with analytical, organic, inorganic and physical chemistry. Single, 30 years, free to locate anywhere. Please reply to Box 45, THE CHEMIST.

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they may list positions under "Positions Available" columns without charge.

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B.S. IN CHEMISTRY GRADUATES. Out of town schools (not New York City) for control work.

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CERAMIC ENGINEERS. Graduates, young, for work in the field of refractories.

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BACTERIOLOGIST. Male. Young. Microbiological research.

For these positions, please write to Box 72, THE CHEMIST.

Correction

Under the photograph on page 180 of the May issue of THE CHEMIST, the caption in front of Dr. Horace G. Byers' name should have read "First President of THE AMERICAN INSTITUTE OF CHEMISTS". Dr. Byers served as president for the fiscal year 1923-1924.



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THE CHEMIST

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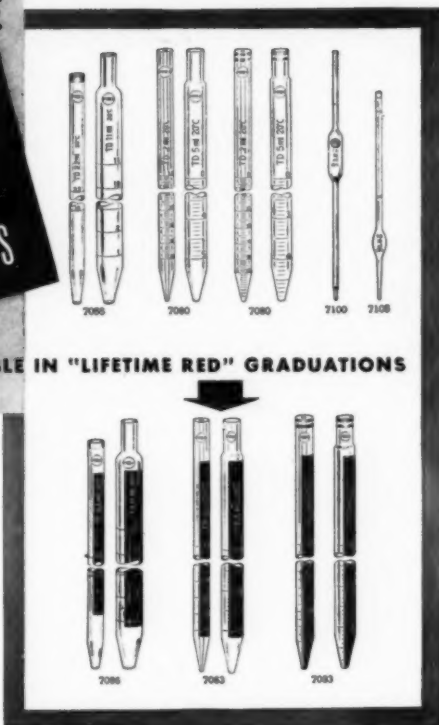
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